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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,541	02/10/2004	Amir Morad	13757US03	3126
23446 7590 04/10/2008 MCANDREWS HELD & MALLOY, LTD 500 WEST MADISON STREET SUITE 3400 CHICAGO, IL 60661				
EXAMINER				
VO, TUNG T				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/776,541

**Applicant(s)**

MORAD ET AL.

**Examiner**

Tung Vo

**Art Unit**

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 February 2008.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 10-36 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 10-36 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 02/10/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/5508)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 10-36 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 34-58 of copending Application No. 10/170,019. Although the conflicting claims are not identical, they are not patentably distinct from each other because both applications claim the same subject matter but slightly in different wording. Note the combined claims 10, 11, and 14 of the instant application (10/776,541) is similar to claim 34 of the copending application (10/170,019).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 10-12, 15-16, 20, 24-25, 28-29, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krishnamurthy et al. (US 6,665,872).

Re claims 10 and 24, Krishnamurthy teaches a single-chip audio/video encoder device (fig. 3) comprising, on a single integrated circuit (fig. 3, note two and more different sub-system could be implemented on a single board, col. 20, lines 34-42):

multiplexer circuitry (308 of fig. 3) that operates in a first mode and a second mode (col. 20, lines 22-25, “multi-channel mode” would obviously suggest a first mode and a second mode), which when operating in the first mode (308 of fig. 3, the multiplexer (308) for multiplexing up to 24 different channels of transport bitstreams from the MPEG-2 encoders; col. 20, lines 10-11) produces a first multiplexed stream (fig. 5, multiplexing bitstreams and outputting a first multiplexed bitstream) from first compressed video (320 of fig. 3), first compressed audio (322 of fig. 3), second compressed video (ENCn, 320 of fig. 3), and second compressed audio (ENCn, 322 of fig. 3); and

which when operating in the second mode concurrently produces the first multiplexed stream from the first compressed video and the first compressed audio (SSI, 328 of fig. 3), and produces a second multiplexed stream (fig. 5, multiplexing bitstreams and outputting a second

multiplexed bitstream) from the second compressed video and the second compressed audio (AUDIO ENC and MPEG-2 ENC of fig. 3);

a first encoder (306 of fig. 3) that receives first uncompressed video data and first uncompressed audio data, and that produces the first compressed video and the first compressed audio;

a second encoder (306 of fig. 3, ENCn) that receives second uncompressed video data and second uncompressed audio data, and that produces the second compressed video and the second compressed audio;

control circuitry (304 of fig. 3, note the CPU (304) is programmable to control all elements, so the CPU would obviously synchronize all element as described in figure 3) that synchronizes the multiplexing circuitry, the first encoder, and the second encoder;

wherein the device (fig. 3, see also fig. 5) transmits the first multiplexed stream to circuitry external (506 of fig. 5, col. 20, lines 27-28) to the device via a first output of the device; and wherein the device (fig. 5) transmits the second multiplexed stream to circuitry external (506 of fig. 5; col. 20, lines 27-28) to the device via a second output of the device.

Re claim 11, Krishnamurthy further teaches wherein the first encoder and the second encoder each comprise a video encoder and an audio encoder (306, 320, and 322 of fig. 3; ECNn of fig. 3).

Re claims 12 and 25, Krishnamurthy further teaches wherein the first encoder and the second encoder operate concurrently (parallel encoding, 306 of fig. 3).

Re claims 15 and 28, Krishnamurthy further teaches wherein the device comprises at least one bus interface (PCI, 302 and 310 of fig. 3) that is configurable to operate to couple the control circuitry (304 of fig. 3) and at least one controller external (316 of fig. 3, downloading micro-codes for MPEG-2 encoder ship, 306 of fig. 3, col. 19, lines 22-28) to the device, wherein the at least one bus interface comprises a plurality of separate electrical signals (PCI of fig. 3).

Re claims 16 and 29, Krishnamurthy further teaches wherein the at least one bus interface is configurable as a peripheral component interconnect (PCI) bus interface (302, PCI BUS of fig. 3).

Re claims 20 and 33, Krishnamurthy further teaches wherein each of the first uncompressed audio data and the second uncompressed audio data represent two audio channels (AUDIO ENC of fig.3).

5. Claims 13 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krishnamurthy et al. (US 6,665,872) in view of Bruck (US 6,519,289).

Re claims 13 and 26, Krishnamurthy does not particularly teach wherein the first video encoder and the second video encoder perform luminance and chrominance filtering.

However, Bruck teaches wherein the video encoder performs luminance and chrominance filtering (col. 1, lines 59-col. 2, line 8).

Taking the teachings of Krishnamurthy and Bruck as a whole, it would have been obvious to one of ordinary skill in the art to modify the luminance and chrominance filtering of Bruck into Krishnamurthy to improve the picture quality.

6. Claims 14, 17-19, 27, 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krishnamurthy et al. (US 6,665,872) in view of Hinchley et al. (US 6,490,250).

Re claims 14, 17, 27, and 30, Krishnamurthy does not particularly disclose external memory devices used as one or both of a frame buffer and/or an output buffer for compressed data; wherein the at least one bus interface is configurable to act as a bus master using direct memory access as claimed.

Hinchley teaches a first storage external to the device and a second storage external (108 of fig. 1) to the device (120 of figs. 1 and 2) synchronous dynamic random access memory (116 of fig. 1).

Therefore, taking the teachings of Krishnamurthy and Hinchley, it would have been obvious to one of ordinary skill in the art to incorporate the first and second storages synchronous dynamic random access memory (108 and 116 of fig. 1) of Hinchley into the first and second interface (318 of fig. 2) Krishnamurthy to provide an integrated multimedia encoding system which operates with reduced memory storage requirements is also needed.

Re claims 18-19, 31-32, Krishnamurthy further teaches wherein the at least one bus interface enables transfer of one or both of uncompressed audio data and/or video data for processing by the device (318 of fig. 3); wherein the first encoder, the second encoder, and the multiplexer circuitry execute microcode instructions received by the device via the at least one bus interface ("C" programmable language and micro-codes are used to instruct elements in figure 3; col.18, lines 28-33; col. 19, lines 26-28).

7. Claims 21-23, 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krishnamurthy et al. (US 6,665,872) in view of Boice et al. (US 6,823,013).

Re claims 21-23, and 34-36, Krishnamurthy does not particularly disclose each of motion estimation processors comprises a plurality of search processors that operate in parallel upon a single macroblock, and each search processor operating at a different one of a plurality of resolutions (scaling or half pixel search, quarter pixel search) as claimed.

Boice teaches each of motion estimation processors (52 of fig. 4) comprises a plurality of search processors (see Abstract: a consequence of the multiple processors subdividing the extended window and analyzing each subdivision in parallel) that operate in parallel upon a single macroblock (figs. 1 and 3), and each search processor operating at a different one of a plurality of resolutions (scaling or half pixel search, quarter pixel search, 36, 38, and 40 of fig. 3)

Therefore, taking the teachings of Krishnamurthy and Boice as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the plurality of search processors (52 of fig. 4) of Boice into each of motion estimation processor of Krishnamurthy to provide the process of motion estimation effectively reduces the temporal redundancy in successive video frames by exploiting the temporal correlation (similarities) that often exists between successive frames.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung Vo whose telephone number is 571-272-7340. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tung Vo/  
Primary Examiner, Art Unit 2621